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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,262	12/04/2006	Hisashi Koga	4600-0119PUS1	3029

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

LOCKARD, JON MCCLELLAND

ART UNIT	PAPER NUMBER
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1647

NOTIFICATION DATE	DELIVERY MODE
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10/24/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/573,262

Applicant(s)

KOGA ET AL.

Examiner

Jon M. Lockard

Art Unit

1647

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☒ Other: sequence alignments.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-4, 7-8, 12, and 16, drawn to polynucleotides, vectors and host cells comprising the same, and compositions and kits comprising the same.

Group II, claim(s) 5-6, 14, and 19, drawn to polypeptides, and kits and compositions comprising the same.

Group III, claim(s) 9, drawn to transgenic organisms.

Group IV, claim(s) 10 and 18, drawn to antibodies, and compositions and kits comprising the same.

Group V, claim(s) 11 and 15, drawn to a screening method utilizing a polynucleotide or cells comprising said polynucleotide.

Group VI, claim(s) 13, drawn to a screening method utilizing a polypeptide.

Group VII, claim(s) 17, drawn to a screening method utilizing an antibody.

2. The inventions listed as Groups I-VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I is directed to a DNA comprising a base sequence encoding a polypeptide comprising the full length or a part of an amino acid sequence which is the same or substantially the same as an amino acid sequence represented by SEQ ID NO:1. However, since van der Zwaag et al. (Dev. Dyn. 225:336-343, 2002) teach a cDNA (accession no. AY116661) that encodes a PLEXIN-D1 polypeptide (See Fig. 1) that shares 92% sequence identity to SEQ ID NO:1 (See attached sequence alignment), and thus encodes part of an amino acid sequence which is the same or substantially the same as SEQ ID NO:1, no special technical feature exists for group I as defined by PCT Rule 13.2, because it does not define a

Art Unit: 1647

contribution over the prior art. Because the technical feature of Group I is not a special technical feature, and because the technical features of the Groups II-VII inventions is not present in the Group I claims, unity of invention is lacking. Furthermore, the polynucleotides of Group I, the polypeptides of Group II, the transgenic organisms of Group III, and the antibodies of Group IV are structurally and functionally different chemical compounds, having different structures and activities, or in the case of the transgenic animals an organism, and each of which can be made and used without the other compounds. The methods of Groups V, VI, and VII require compounds which are functionally different from each other and each can be made and used without the other. Lack of unity is shown because these compounds lack a common utility which is based upon a common structural feature which has been identified as the basis for that common utility.

Further Restriction Within Groups I-VII

3. Whichever Group is elected, further restriction within the elected Group is required to one of the following:

Applicants must further elect ***one*** polypeptide and the corresponding nucleic acid that encodes said polypeptide selected from SEQ ID NO: (encoded by SEQ ID NO:2), SEQ ID NO:15 (encoded by SEQ ID NO:16), or SEQ ID NO:18 (encoded by SEQ ID NO:19)

4. The polypeptides and polynucleotide molecules do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Each polypeptide and polynucleotide molecule represents a structurally and functionally different chemical compound from each other, having different chromosomal locations and sequences for the nucleic acids, and having different amino acid sequences, structures and activities for the polypeptides, each of which can be made and used without the other compounds. Accordingly, the methods of using the compounds are also, therefore, different methods. Lack of unity is shown because these compounds and methods lack a common utility which is based upon a common structural feature

Art Unit: 1647

which has been identified as the basis for that common utility.

5. **Applicants are advised that this is not a species election.**

6. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

7. In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Art Unit: 1647

8. **Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.**

9. The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

10. If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

11. Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

12. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Advisory Information

Effective November 1, 2007, if applicant wishes to present more than 5 independent claims or more than 25 total claims in an application, applicant will be required to file an examination support document (ESD) in compliance with 37 CFR 1.265 before the first Office action on the merits (hereafter "5/25 claim threshold"). See Changes to Practice for Continued Examination Filings, Patent Applications Containing Patentably Indistinct Claims, and Examination of Claims in Patent Applications, 72 Fed. Reg. 46715 (Aug. 21, 2007), 1322 Off. Gaz. Pat. Office 76 (Sept. 11, 2007) (final rule). The changes to 37 CFR 1.75(b) apply to any pending applications in which a first Office action on the merits (FAOM) has not been mailed before November 1, 2007. Withdrawn claims will not be taken into account in determining whether an application exceeds the 5/25 claim threshold. For more information on the final rule, please see <http://www.uspto.gov/web/offices/pac/dapp/opla/presentation/clmcontfinalrule.html>.

In response to the restriction requirement set forth in this Office action, applicant is required to file an election responsive to the restriction requirement. Applicant may not file a suggested restriction requirement (SRR) in lieu of an election responsive to the restriction requirement as a reply. A SRR alone will not be considered a *bona-fide* reply to this Office action.

If applicant elects an invention that is drawn to no more than 5 independent claims and no more than 25 total claims, applicant will not be required to file an ESD in compliance with 37 CFR 1.265 that covers each of the elected claims. If the elected invention is drawn to more than 5 independent claims or more than 25 total claims, applicant may file an amendment canceling a number of elected claims so that the elected invention would be drawn to no more than 5 independent claims and no more than 25 total claims.

If the restriction requirement is mailed on or after November 1, 2007, applicant is also required to file an ESD in compliance with 37 CFR 1.265 that covers each of the elected claims, unless the elected invention is drawn to no more than 5 independent claims and no more than 25 total claims taking into account any amendment to the claims. To avoid the abandonment of the

Art Unit: 1647

application, the ESD (if required) and the election must be filed within **TWO MONTHS** from the mailing date of this Office action. The two-month time period for reply is extendable under 37 CFR 1.136.

If the restriction requirement is mailed before November 1, 2007, the election must be filed within **ONE MONTH** or THIRTY DAYS, whichever is longer, from the mailing date of this Office action. The time period for reply is extendable under 37 CFR 1.136. Furthermore, if the elected invention is drawn to more than 5 independent claims or more than 25 total claims taking into account any amendment to the claims, the Office will notify applicant and provide a time period in which applicant is required to file an ESD in compliance with 37 CFR 1.265 covering each of the elected claims or amend the application to contain no more than 5 independent elected claims and no more than 25 total elected claims.

Art Unit: 1647

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jon M. Lockard** whose telephone number is **(571) 272-2717**. The examiner can normally be reached on Monday through Friday, 7:00 AM to 4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Manjunath N. Rao**, can be reached on **(571) 272-0939**.

The fax number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).



Jon M. Lockard, Ph.D.
October 18, 2007

RT and mouse cDNA sequences.";
 RL Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
 RN [4]
 RP GLYCOSYLATION [LARGE SCALE ANALYSIS] AT ASN-500, AND MASS
 RP SPECTROMETRY.
 RX PubMed=16335952; DOI=10.1021/pr0502065;
 RA Liu T., Qian W.-J., Gritsenko M.A., Camp D.G. II, Monroe M.E.,
 RA Moore R.J., Smith R.D.;
 RT "Human plasma N-glycoproteome analysis by immunoaffinity subtraction,
 RT hydrazide chemistry, and mass spectrometry.";
 RL J. Proteome Res. 4:2070-2080(2005).
 CC -!- ALTERNATIVE PRODUCTS:
 CC Event=Alternative splicing; Named isoforms=2;
 CC Name=1;
 CC IsoId=Q9Y4D7-1; Sequence=Displayed;
 CC Name=2;
 CC IsoId=Q9Y4D7-2; Sequence=VSP_011516;
 CC -!- TISSUE SPECIFICITY: Detected at low levels in heart, placenta,
 CC lung, skeletal muscle, kidney, thymus and liver. Detected at very
 CC low levels in brain, colon, spleen, small intestine and peripheral
 CC blood leukocytes.
 CC -!- SIMILARITY: Belongs to the plexin family.
 CC -!- SIMILARITY: Contains 3 IPT/TIG domains.
 CC -!- SIMILARITY: Contains 1 Sema domain.
 CC -----
 CC Copyrighted by the UniProt Consortium, see <http://www.uniprot.org/terms>
 CC Distributed under the Creative Commons Attribution-NoDerivs License
 CC -----
 DR EMBL; AB014520; BAA31595.1; ALT_INIT; mRNA.
 DR EMBL; AY116661; AAM49063.1; -; mRNA.
 DR EMBL; BC003526; AAH03526.1; -; mRNA.
 DR EMBL; BC011848; AAH11848.1; -; mRNA.
 DR UniGene; Hs.301685; -.
 DR Ensembl; ENSG00000004399; Homo sapiens.
 DR HGNC; HGNC:9107; PLXND1.
 DR MIM; 604282; gene.
 DR InterPro; IPR002909; IPT_TIG_rcpt.
 DR InterPro; IPR003659; Plexin-like.
 DR InterPro; IPR013548; Plexin_cytopl.
 DR InterPro; IPR002165; Plexin_repeat.
 DR InterPro; IPR008936; Rho_GAP.
 DR InterPro; IPR001627; Sema.
 DR Pfam; PF08337; Plexin_cytopl; 1.
 DR Pfam; PF01437; PSI; 2.
 DR Pfam; PF01403; Sema; 1.
 DR Pfam; PF01833; TIG; 3.
 DR SMART; SM00429; IPT; 3.
 DR SMART; SM00423; PSI; 3.
 DR SMART; SM00630; Sema; 1.
 DR PROSITE; PS51004; SEMA; 1.
 KW Alternative splicing; Glycoprotein; Membrane; Polymorphism; Receptor;
 KW Repeat; Signal; Transmembrane.
 FT SIGNAL 1 46 Potential.
 FT CHAIN 47 1925 Plexin-D1.
 FT /FTId=PRO_0000024676.
 FT TOPO_DOM 47 1271 Extracellular (Potential).
 FT TRANSMEM 1272 1292 Potential.

RESULT 4

PLXD1 HUMAN

ID PLXD1 HUMAN STANDARD; PRT; 1925 AA.
AC Q9Y4D7; Q6PJS9; Q8IZJ2; Q9BTQ2;
DT 31-AUG-2004, integrated into UniProtKB/Swiss-Prot.
DT 31-AUG-2004, sequence version 2.
DT 25-JUL-2006, entry version 36.
DE Plexin-D1 precursor.
GN Name=PLXND1; Synonyms=KIAA0620;
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
OC Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP NUCLEOTIDE SEQUENCE [LARGE SCALE MRNA] (ISOFORM 1).
RC TISSUE=Brain;
RX MEDLINE=98403880; PubMed=9734811; DOI=10.1093/dnares/5.3.169;
RA Ishikawa K., Nagase T., Suyama M., Miyajima N., Tanaka A., Kotani H.,
RA Nomura N., Ohara O.;
RT "Prediction of the coding sequences of unidentified human genes. X.
RT The complete sequences of 100 new cDNA clones from brain which can
RT code for large proteins in vitro.";
RL DNA Res. 5:169-176(1998).
RN [2]
RP NUCLEOTIDE SEQUENCE [MRNA] (ISOFORM 1), AND TISSUE SPECIFICITY.
RX MEDLINE=22299888; PubMed=12412018; DOI=10.1002/dvdy.10159;
RA van der Zwaag B., Hellemons A.J.C.G.M., Leenders W.P.J.,
RA Burbach J.P.H., Brunner H.G., Padberg G.W., Van Bokhoven H.;
RT "PLEXIN-D1, a novel plexin family member, is expressed in vascular
RT endothelium and the central nervous system during mouse
RT embryogenesis.";
RL Dev. Dyn. 225:336-343(2002).
RN [3]
RP NUCLEOTIDE SEQUENCE [LARGE SCALE MRNA] OF 1386-1925 (ISOFORMS 1 AND
RP 2).
RC TISSUE=Muscle, and Uterus;
RX MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA Fahey J., Helton E., Kettelman M., Madan A., Rodrigues S., Sanchez A.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT "Generation and initial analysis of more than 15,000 full-length human

FT	TOPO_DOM	1293	1925	Cytoplasmic (Potential).
FT	DOMAIN	47	546	Sema.
FT	DOMAIN	891	979	IPT/TIG 1.
FT	DOMAIN	981	1066	IPT/TIG 2.
FT	DOMAIN	1069	1160	IPT/TIG 3.
FT	CARBOHYD	86	86	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	155	155	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	188	188	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	224	224	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	481	481	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	500	500	N-linked (GlcNAc. . .).
FT	CARBOHYD	583	583	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	696	696	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	736	736	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	802	802	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	965	965	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	1017	1017	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	1060	1060	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	1099	1099	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	1118	1118	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	1132	1132	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	1237	1237	N-linked (GlcNAc. . .) (Potential).
FT	CARBOHYD	1257	1257	N-linked (GlcNAc. . .) (Potential).
FT	VAR_SEQ	1766	1925	SLPLRFWVNILKNPQFVFDIDKTDHIDACLSVIAQAFIDAC
FT				SISDLQLGKDSPTNKLLYAKEIPEYRKIVQRYRKIQDMTP
FT				LSEQEMNAHLAEESRKYQNEFNTNVAMAEIYKYAKRYPQI
FT				MAALEANPTARRTQLQHKFEQVVALMEDNIYECYSEA ->
FT				RWRPSSPVLGEHPPEPPVCL (in isoform 2).
FT				/FTid=VSP_011516.
FT	VARIANT	870	870	M -> V (in dbSNP:2255703).
FT				/FTid=VAR_022144.
SQ	SEQUENCE	1925 AA;	212095 MW;	26001F5D0B2A80E5 CRC64;

Query Match 92.2%; Score 8468; DB 1; Length 1925;
 Best Local Similarity 91.9%; Pred. No. 0;
 Matches 1606; Conservative 52; Mismatches 88; Indels 2; Gaps 1;

Qy	1	SMLNVAANHPNASTVGLVLPPTSGTGGSRLLVGATYTGFGSAFFPRNRSLEDHRFENTPE	60
		: : : :	
Db	178	SMLNVAANHPNASTVGLVLPAAAGAGSRLLVGATYTGYGSSFFPRNRSLEDHRFENTPE	237
Qy	61	IAIRSLDARGDLAKLFTFDLNPSSDDNLIKIKQGAKEQHKLGFVRAFLHPAVPPHSAQPYA	120
		:	
Db	238	IAIRSLDTRGDLAKLFTFDLNPSSDDNLIKIKQGAKEQHKLGFVSAFLHPSDPPPGAQSYA	297
Qy	121	YLALNSEARAGDKDSQARSLLARICLPRGAGGDAKKLTESYIQLGLQCAGGAGRGDLYSR	180
		:	
Db	298	YLALNSEARAGDKESQARSLLARICLPHGAGGDAKKLTESYIQLGLQCAGGAGRGDLYSR	357
Qy	181	LVSVPFAPAREQFFAVFERPQGAPGARNAPAALCAFRFDDVQAAIRAARTACFVEPAPDVVA	240
		: : :	
Db	358	LVSVPFARERLFAVFERPQGSAPAARAAPAALCAFRFADVRAAIRAARTACFVEPAPDVVA	417
Qy	241	VLDSVVQGTGPACESKRNIQLQPEQLDCGAAHLQHPLTILQPLRASPVFRAPGLTAVAVA	300
		: : :	
Db	418	VLDSVVQGTGPACERKLNIQLQPEQLDCGAAHLQHPLSILQPLKATPVFRAPGLTSVAVA	477

Qy	301	SANNYTAVFLGTATGRLLKISLNESMQVVSRRVLTVAAYGEPVHHVMQFDPMDPGYLYLMT	360
Db	478	SVNNYTAVFLGTVNGRLLKINLNESMQVVSRRVLTVAAYGEPVHHVMQFDPADSVYLYLMT	537
Qy	361	SHQMARVKVAACEVHSTCGDCVGAADAYCGWCTLETRCTLQQDCTNSSQPHFWTSASEGP	420
Db	538	SHQMARVKVAACNVHSTCGDCVGAADAYCGWCALETRCTLQQDCTNSSQQHFWTSASEGP	597
Qy	421	SRCPAMTVLPSEIDVHRDYGTMILQISGSLPSLSGMEMACDYGNGVRTVARVPGPAYDHQ	480
Db	598	SRCPAMTVLPSEIDVRQEYPGMILQISGSLPSLSGMEMACDYGNNIRTVARVPGPAFGHQ	657
Qy	481	IAYCNLLPRAQFSPFAGQDHVTVEMSVRVKGNIVSANFTIYDCSRIGQVYPHTACTSC	540
Db	658	IAYCNLLPRDQFPFPNPQDHVTVEMSVRVNGRNVKANFTIYDCSRTAQVYPHTACTSC	717
Qy	541	LSTQWPCSWCIQLHSCVSNQSQCDSPNPTSPQDCPQILPSPLAPVPTGGSQDILVPLTK	600
Db	718	LSAQWPCFWCSQQHSCVSNQSRCEASPNPTSPQDCPRTLLSPLAPVPTGGSQNILVPLAN	777
Qy	601	ATFFHGSSLECSFGLEESFEAVWANNLSVRNCQVVLHTTQKSQVFPLSLKLKGPDPDRFLD	660
Db	778	TAFFQGAALECSFGLEEIFEAVWVNESVVRCDQVVLHTTRKSQVFPLSLQLKGRPARFLD	837
Qy	661	SPNPMTVVVYNCAMGSPDCSQCLGREDLGHLCVWNDGCRLRGPLQPLPGTCPAPEIRAIE	720
Db	838	SPEPMTVMVYNCAMGSPDCSQCLGREDLGHLCMWSDGCRLRGPLQPMAGTCPAPEIRAIE	897
Qy	721	PLSGPLDGGTLLTIRGRNLGRRLSDVAHGVMWIGSVACEPLADRYTVSEEIVCATGPAAGA	780
Db	898	PLSGPLDGGTLLTIRGRNLGRRLSDVAHGVMWIGGVACEPLPDRTYTVSEEIVCVTGPAAGP	957
Qy	781	FSDVVTVNVSKEGRSREQFSYVLPTVHSLEPSMGPKAGGTRITIHGSDLNVGSMLQVLVN	840
Db	958	LSGVVTVNASKGKSRDRFSYVLPLVHSLEPTMGPKAGGTRITIHGNDLHVGSSELQVLVN	1017
Qy	841	DTDPTDLTRTATSITCTVPGGTLPSPVPVCVRFESRGCVHGNLTFWYMQNPNVITAISPG	900
Db	1018	DTDPTCELMRTDTSIACMTPEGALPAPVPVCVRFERRGCVHGNLTFWYMQNPNVITAISPR	1077
Qy	901	RSPVSGGRTITVAGERFHMVQNVSMVAVHHIGREPTFCVKVLNSTLITCSPGALSNASAPV	960
Db	1078	RSPVSGGRTITVAGERFHMVQNVSMVAVHHIGREPTLCKVLNSTLITCSPGALSNASAPV	1137
Qy	961	DDFFINGRAYADE--AAEELLDPAEAQRGSRFRLDYLPNPQFSTAKREKWIKHHPGEPLTL	1018
Db	1138	DDFFINGRAYADEVAVAEELLDPEEAQRGSRFRLDYLPNPQFSTAKREKWIKHHPGEPLTL	1197
Qy	1019	VIHKEQDSLGLSHEYHIKIGQVSCDIQIISDRVIHCSVNESLGAEGQLPITIQVGNFN	1078
Db	1198	VIHKEQDSLGLQSHEYRVKIGQVSCDIQIVSDRIHCSVNESLGAAGVQLPITIQVGNFN	1257
Qy	1079	QTIATLQLGGSETAIVSVIVICSVLLLLSVVALFVFCTKSRRARYWQKTLQMEEMESQ	1138
Db	1258	QTIATLQLGGSETAIIIVSVIVICSVLLLLSVVALFVFCTKSRRARYWQKTLQMEEMESQ	1317
Qy	1139	IREEIRKGFAELQTDMDLTKELNRSQGIPFLEYKHVFVTRTFFPKCSSLYEERYVLPSKT	1198

Db	1318	IRREEIRKGF AELQTDMDLTKE LNRSQGIPFLEYKH FVTRTFFPKCSSLYEERYVLPSQT	1377
Qy	1199	LNSQGGSP PQETHPLLGEWNIP EHC RPSMEEGISLFSSLLNNKHFLIVFVHALEQQKDFA	1258
Db	1378	LNSQGSSQAQETHPLLGEWKIPESCRPNMEEGISLFSSLLNNKHFLIVFVHALEQQKDFA	1437
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Db	1438	VRDRCSLASLLTIALHGKLEY YTSIMKELLVDLIDASA AKNPKMLLRRTESVVEKMLTNW	1497
Qy	1319	MSICMYGCLRET VGEPPFLL LCAIKQQINKGSIDAITGKARYTLNEEWLLRENIEAKPRN	1378
Db	1498	MSICMYSC LRET VGEPPFLL LCAIKQQINKGSIDAITGKARYTLNEEWLLRENIEAKPRN	1557
Qy	1379	LNVSFQCGMDSL SVRAMD TDTLTQVKEKILEAFCKNVPYSQWPRAEDVDLEWFASSTQS	1438
Db	1558	LNVSFQCGMDSL SVRAMD TDTLTQVKEKILEAFCKNVPYSQWPRAEDVDLEWFASSTQS	1617
Qy	1439	YVLRDLDDTSVVEDGRKKLNTLAHYKIPEGASLAMS LTDKKDSTLGRVKDL DTEKYFHLV	1498
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Qy	1499	LPTDELVEPKKSHRQSHRKKVLPEIYLTRLLSTKGTLQKFLDDLFKAILSIREDKPPLAV	1558
Db	1678	LPTDELAEPKKSHRQSHRKKVLPEIYLTRLLSTKGTLQKFLDDLFKAILSIREDKPPLAV	1737
Qy	1559	KYFFDFLEEQAEKRGISDPDTLHIWK TNSLPLRFWVNILKNPQFVFDIEKTDHIDACLSV	1618
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Db	1798	IAQAFIDACSISDLQLGKDSPTNKLLYAKEIPEYRKIVQRY YKQIQDMTPLSEQEMNAHL	1857
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Db	1858	AEESRKYQNEFNTNVAMAEIYKYAKRYRPQIMAALEANPTARRTQLQHKFEQVVALMEDN	1917
Qy	1739	IYECYSEA	1746
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RESULT 6

AY116661

LOCUS AY116661 7095 bp mRNA linear PRI 14-NOV-2002

DEFINITION Homo sapiens plexin D1 (PLXND1) mRNA, complete cds.

ACCESSION AY116661

VERSION AY116661.1 GI:24953986

KEYWORDS .

SOURCE Homo sapiens (human)

ORGANISM Homo sapiens

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
Catarrhini; Hominidae; Homo.

REFERENCE 1 (bases 1 to 7095)

AUTHORS Van Der Zwaag, B., Hellemons, A.J., Leenders, W.P., Burbach, J.P.,
Brunner, H.G., Padberg, G.W. and Van Bokhoven, H.TITLE PLEXIN-D1, a novel plexin family member, is expressed in vascular
endothelium and the central nervous system during mouse
embryogenesisJOURNAL Dev. Dyn. 225 (3), 336-343 (2002)

PUBMED 12412018

REFERENCE 2 (bases 1 to 7095)

AUTHORS van der Zwaag, B. and van Bokhoven, H.

TITLE Direct Submission

JOURNAL Submitted (31-MAY-2002) Neurology, UMC Nijmegen, Reinier Postlaan
4, Nijmegen, Gelderland 6525 GC, The Netherlands

FEATURES Location/Qualifiers

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ORIGIN

Query Match 67.3%; Score 4157.8; DB 5; Length 7095;
Best Local Similarity 81.7%; Pred. No. 0;
Matches 5023; Conservative 0; Mismatches 1002; Indels 124; Gaps 14;

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Db 2570 AGGCTGTGTGGGTGAATGAGTCTGTTGTACGCTGTGACCAGGTGGTGCTGCACACGACCC 2629

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Db 2630 GGAAGAGCCAGGTGTTCCCGCTCAGCCTCCAATAAAGGGCGGCCAGCCCATTCTTGG 2689

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Db	1190		CCTACATCCAGTTGGGCTTGCACTGCGCGGGCGGGCGGGCCGCGGCGACCTCTACAGCC	1249
Qy	541		GCCTCGTGTCTGGTTTTCCCCGCGCGGAGCAGTTCTTCGCCGTCTTCGAGCGGCCCCAGG	600
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Qy	721		CGGTGTTGGACAGTGTGGTGCAGGGCACCGGGCCGGCCTGCGAGAGCAAGCGCAACATAC	780
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Qy	3415	AGATCCGAGAGGAGATCCGTAAAGGCTTTGCGGAGCTGCAGACAGACATGACGGATCTCA	3474
Db	4130	AGATCCGAGAGGAAATCCGCAAAGGCTTCGCTGAGCTGCAGACAGACATGACAGATCTCA	4189
Qy	3475	CCAAGGAGCTGAACCGCAGCCAGGGCATCCCCTTCTTGGAGTACAAGCACTTCGTGACTC	3534
Db	4190	CCAAGGAGCTGAACCGCAGCCAGGGCATCCCCTTCTTGGAGTATAAGCACTTCGTGACCC	4249
Qy	3535	GAACCTTCTTCCCCAAGTGCTCTTCCCTCTATGAAGAGCGGTATGTGCTGCCCTCGAAGA	3594
Db	4250	GCACCTTCTTCCCCAAGTGTTCTCCCTTTATGAAGAGCGTTACGTGCTGCCCTCCCAGA	4309
Qy	3595	CCCTCAACTCCCAGGGTGGCTCCCCGCCACAGGAAACCCACCCACTGCTGGGAGAGTGGA	3654
Db	4310	CCCTCAACTCCCAGGGCAGCTCCCAGGCACAGGAAACCCACCCACTGCTGGGAGAGTGGA	4369
Qy	3655	ACATCCCTGAACACTGTTCGGCCAGCATGGAGGAGGGGATCAGCCTGTTCTCCTCACTGC	3714
Db	4370	AGATTCTGAGAGCTGCCGGCCCCAACATGGAAGAGGGAATTAGCTTGTCTCCTCACTAC	4429
Qy	3715	TCAACAACAAGCACTTCTCATCGTCTTCGTCCATGCTCTGGAGCAGCAGAAGGACTTCG	3774
Db	4430	TCAACAACAAGCACTTCTCATCGTCTTTGTCCACGCGCTGGAGCAGCAGAAGGACTTTG	4489
Qy	3775	CAGTGCCTGACAGGTGCAGCCTGGCGTCCCTGCTGACCATCGCGCTGCACGGCAAGCTGG	3834
Db	4490	CGGTGCGCGACAGGTGCAGCCTGGCCTCGCTGCTGACCATCGCGCTGCACGGCAAGCTGG	4549
Qy	3835	AGTACTATACGAGCATCATGAAGGAGCTGCTCGTGGACCTCATCGACGCCTCGGCGGCCA	3894

Db	4550	AGTACTACACCAGCATCATGAAGGAGCTGCTGGTGGACCTCATTGACGCCTCGGCCGCCA	4609
Qy	3895	AGAACCCCAAGCTCATGTTGCGGCGCACGGAGTCTGTGGTGGAGAAGATGCTTACCAACT	3954
Db	4610	AGAACCCCAAGCTCATGCTGCGGCGCACAGAGTCTGTGGTGGAGAAGATGCTCACCAACT	4669
Qy	3955	GGATGTCCATCTGCATGTACGGCTGCCTGAGGGAGACAGTAGGTGAGCCGTTCTTCCTGC	4014
Db	4670	GGATGTCCATCTGCATGTACAGCTGTCTGCGGGAGACGGTGGGGGAGCCATTCTTCCTGC	4729
Qy	4015	TGTTGTGTGCCATCAAGCAGCAGATCAACAAAGGCTCCATCGACGCCATCACAGGCAAAG	4074
Db	4730	TGCTGTGTGCCATCAAGCAGCAAATCAACAAGGGCTCCATCGACGCCATCACAGGCAAAG	4789
Qy	4075	CCCGCTACACACTCAACGAGGAGTGGCTGCTGAGGGAGAACATTGAGGCCAAGCCCCGGA	4134
Db	4790	CCCGCTACACACTCAATGAGGAGTGGCTGCTGCGGGAGAACATCGAGGCCAAGCCCCGGA	4849
Qy	4135	ACTTGAACGTGTCCTTCCAGGGCTGTGGGATGGACTCCCTCAGCGTGCGGGCCATGGACA	4194
Db	4850	ACCTGAACGTGTCCTTCCAGGGCTGTGGCATGGACTCGCTGAGCGTGCGGGCCATGGACA	4909
Qy	4195	CCGACACGCTGACGCAGGTGAAGGAGAAGATCCTGGAAGCCTTCTGCAAGAACGTCCCCT	4254
Db	4910	CCGACACGCTGACACAGGTCAAGGAGAAGATCCTGGAGGCCTTCTGCAAGAATGTGCCCT	4969
Qy	4255	ACTCACAGTGGCCGCGGGCGGAGGACGTGGACCTTGAATGGTTTGCTCGAGTACCCAGA	4314
Db	4970	ACTCCCAGTGGCCGCGTGCAGAGGACGTGACCTTGAGTGGTTCGCCTCCAGCACACAGA	5029
Qy	4315	GCTACGTCTCTCCGGGACCTGGATGACACATCAGTGGTGGAGGACGGCCGTAAGAACTGA	4374
Db	5030	GCTACATCCTTCGGGACCTGGACGACACCTCAGTGGTGGAGACGGCCGCAAGAAGCTTA	5089
Qy	4375	ACACACTGGCCCACTACAAGATACCTGAGGGCGCCTCCCTAGCCATGAGCCTCACAGACA	4434
Db	5090	ACACGCTGGCCCATTAACAAGATCCCTGAAGGTGCCTCCCTGGCCATGAGTCTCATAGACA	5149
Qy	4435	AGAAGGACAGTACCCTGGGCAGAGTGAAAGACTTGGACACAGAAAAGTATTTCCATTTGG	4494
Db	5150	AGAAGGACAACACACTGGGCCGAGTGAAAGACTTGGACACAGAGAAGTATTTCCATTTGG	5209
Qy	4495	TGCTACCTACGGATGAGCTGGTAGAGCCTAAGAAATCTCACCGGCAGAGCCACCGCAAGA	4554
Db	5210	TGCTGCCTACGGACGAGCTGGCGGAGCCCAAGAAGTCTCACCGGCAGAGCCATCGCAAGA	5269
Qy	4555	AAGTATTGCCAGAGATCTACCTGACCCGCCTGCTGTCCACCAAGGGCACGCTGCAGAAGT	4614
Db	5270	AGGTGCTCCCGGAAATCTACCTGACCCGCCTGCTCTCCACCAAGGGCACGTTGCAGAAGT	5329
Qy	4615	TCCTAGATGACCTGTTCAAGGCTATCCTGAGCATCCGAGAGGACAAGCCCCGCTGGCTG	4674
Db	5330	TTCTGGATGACCTGTTCAAGGCCATTCTGAGTATCCGTGAAGACAAGCCCCCACTGGCTG	5389
Qy	4675	TCAAGTATTTCTTTGACTTCCTAGAGGAACAGGCGGAGAAGAGAGGCATCTCCGACCCTG	4734

Db	5390	TCAAGTACTTTTTTCGACTTCCTGGAGAGCAGGCTGAGAAGAGGGGAATCTCCGACCCCG	5449
Qy	4735	ACACCCTGCATATCTGGAAGACCAACAGCCTTCCCTGCGCTTCTGGGTGAACATCTTAA	4794
Db	5450	ACACCCTACACATCTGGAAGACCAACAGCCTTCTCTCCGTTCTGGGTGAACATCCTGA	5509
Qy	4795	AAAATCCCCAGTTTGTCTTCGACATAGAGAAGACGGACCACATCGACGCTGCCTGTCTG	4854
Db	5510	AGAACCCCCAGTTTGTCTTTGACATCGACAAGACAGACCACATCGACGCTGCCTTTCAG	5569
Qy	4855	TCATCGCACAGGCCTTCATCGATGCCTGCTCCATCTCTGACCTGCAGCTGGGCAAGGACT	4914
Db	5570	TCATCGCGCAGGCCTTCATCGACGCTGCTCCATCTCTGACCTGCAGCTGGGCAAGGATT	5629
Qy	4915	CACCCACCAACAAGCTTCTGTACGCGAAGGAGATCCCTGAGTACCGGAAGACCGTACAGC	4974
Db	5630	CGCCAACCAACAAGCTCCTCTACGCCAAGGAGATTCTGAGTACCGGAAGATCGTGCAGC	5689
Qy	4975	GCTATTATAAACAGATCCAAGACATGACGCCGCTCAGCGAGCAGGAAATGAACGCACACC	5034
Db	5690	GCTACTACAAGCAGATCCAGGACATGACGCCGCTCAGCGAGCAAGAGATGAATGCCCATC	5749
Qy	5035	TGGCCGAGGAGTCTCGGAAATACCAGAATGAGTTCAACACAAACGTGGCCATGGCTGAGA	5094
Db	5750	TGGCCGAGGAGTCGAGGAAATACCAGAATGAGTTCAACACCAATGTGGCCATGGCAGAGA	5809
Qy	5095	TTTATAAATATGCTAAGAGGTATCGACCACAGATCATGGCTGCCCTGGAGGCCAACCCCA	5154
Db	5810	TTTATAAGTACGCCAAGAGGTATCGGCCGAGATCATGGCCGCGCTGGAGGCCAACCCCA	5869
Qy	5155	CAGCCCGCAGGACCCAGCTACAGCACAAAGTTTGAACAGGTGGTGGCTCTGATGGAAAACA	5214
Db	5870	CGGCCCGGAGGACACAACCTGCAGCACAAAGTTTGAGCAGGTGGTGGCTTTGATGGAGGACA	5929
Qy	5215	ATATCTATGAGTGTACAGCGAGGCCTGATGCAGAAGAGTGACCAGGAGCTTCGGCCAGG	5274
Db	5930	ACATCTACGAGTGCTACAGTGAGGCCTGAGACACATG-GAGAGTTGGTCAGGCTGCTGCT	5988
Qy	5275	GAGACGGCGTGACAGGCCACTTGGCCTCCACTTGGT-TTCTTCCCCACATCTCTCACTTGG	5333
Db	5989	GGGAGAAATGGACGCCCACTGGGCCTCAACTTGATCTTCTACCCCGTGCTGTGACTCAG	6048
Qy	5334	GCTGGGAAC TGACAGAGGAGCCTGCTGGGCTAGGAGTGGGGGACACTGGCCTCTTAGTGC	5393
Db	6049	ACTGGGAAATACTGAGCAGAGACGGCTGGGGCGGGGGCAGGAGAGGGGCTGCTCTCTG-	6107
Qy	5394	CCGGCTGCCGAGCTCTTGGCCTTGTCCTTGGGGCATCTCTGTCCCCTCCACCTGCCCAA	5453
Db	6108	-AGACAGGGGCGCCCCCGCCTTGACCCCTGGGCACCTCCATCCCCCTCCCACCTGTCCCCA	6166
Qy	5454	GACCCAAC TCTAGGATGAAGGCCTTGAATATCGATCG-----CTGCCAGTCCCTA	5503
Db	6167	GATCAGTCTCTGGGATGGAGGCCAGAGAGCTGGTCAGGCTCCCCCATCTGCCAGCACGG	6226
Qy	5504	ATAAGACTTTCCTGCCAACCAGGACAGCCTGGACCATGCCTGCCTGTTCACTGT-----	5558
Db	6227	CCTGCACTGTGCCACCCACTTGCTCCACAACGTCCAGTTGGTCTGCTGCCAAGAGCCC	6286

Qy	5559	-----TTCAGGCTGCTCAGCACACATTGGGAGAG-----GTGGCCAT	5595
Db	6287	CGTGCATCCAGGCGGCCAAGCACAACTGGGGGAGAGGAGGCCGCCAGCCCGGAGGCTGC	6346
Qy	5596	ATCCCAG--AACACTACCTCATCCACCTGGCAGAGGGAA-----	5632
Db	6347	AGCCCAGAAACTCTACCTCATCCACACTGGTGCAGGGAGCCCTCCTTGAAGTACCTTTG	6406
Qy	5633	-----TTTCTGCTTCAGCCACCAAGCAGTTGTCT----GTGTCCCTCATCCAGAGGGGGC	5683
Db	6407	ATTGGTTTCTGCTTCAACTACCAAATGTTATCTCCACTTCCCCCTCACCCGTAGAGGAT	6466
Qy	5684	CTTGGCCACCAACAGTTCCAAACCAGGTCAGCTGTTAGCCGTCTCATTGGCCAGTGGCAG	5743
Db	6467	CCTGGCCACAGACAGTTTCAAGTAGTGTGAGATTTTGTGTGCTTGGGCGGCTGTTGGTAG	6526
Qy	5744	CATGGGCAGTGCCATTGC-----CCACAGAACGGTGGAGAGAGG	5783
Db	6527	AGTGGGCAGTGCCCGGCCATGGGGTGCTCTGTGGGCTTCTCCAGGAGCAGGGAGGGTGG	6586
Qy	5784	GGGACAGGCTGGGGG-----TTCCTGGCCCCAGGAAAGGGAGGAAGGCG	5827
Db	6587	AGGGGAGGGATGGGGGGCACAGGAGCTGGGAGCCCCGTCTCCAGGAAAAGGAGAGGGGTT	6646
Qy	5828	AGGATGCAG---GGCTGTAGCTGGACTACTCAGTCTTCCTGGAAGTGTCTTCTAAAGAGCA	5884
Db	6647	AAGATGCACCGAGGCTGTAGCTGGGCTACTTGATCTTGCTGAAAGTGTCTTCTAAAGATAG	6706
Qy	5885	CCACTTTTTTTTTGTTTTTTGTTTTTTAAGAAAAAAAAAACTTTTATATATTTAAACAAAA	5944
Db	6707	CACCACTTTTTTTTTTAAAGCTTTTATATATTTAAAAACGTATCATGCACCAACTGTGAA	6766
Qy	5945	ACTTATGCACCAACTGTGAATAGCTGCCGCTTGTGCAGATCCCCAGGGGCTCCCGGTGAC	6004
Db	6767	TAGCTGCCGCT-----TGCGCAGAGGACCCGGGGAGGGGTCCCAGAGGCTCCCCATGCA	6821
Qy	6005	ACACTGGAAATGACTGTTCCAGGGGACAG	6033
Db	6822	ACACTGGAAATGACTGTTCCAGAGAGCGG	6850